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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/437,882	11/10/1999	Lex Kosowsky	23587-702	8579

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EXAMINER

PATEL, ISHWARBHAI B

ART UNIT PAPER NUMBER

2827

DATE MAILED: 08/12/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/437,882

Applicant(s)

KOSOWSKY, LEX

Examiner

Ishwar (I. B.) Patel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 April 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 10-14, 18, 22-31, 36 and 49-61 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 10-14, 18, 22-31, 36 and 49-61 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 19 April 2002 is: a) ☐ approved b) ☒ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Drawings

1. The proposed drawing correction, marked in red, filed on April 14, 2002, in figure number 7 is acceptable but the figures are still to be amended to incorporate the comments of "Notice of Draftsperson's Patent drawing review" mailed with previous action, paper No. 9.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 22 and 36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 22 and 36 depend upon cancelled base claims 20 and 35 respectively.

Both the claims 22 and 36 are not examined.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 10-14, 18, 23-31, 49-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shrier, US Patent No 4,977,357 in view of Shrier US Patent No. 5, 248,517, hereafter referred to as '517, disclosed by the applicant.

Regarding claim 1, Shrier discloses a device comprising:

a substrate comprising voltage switchable dielectric material which renders the substrate conductive when a voltage is applied to the substrate above a threshold voltage value and renders the substrate resistive when voltage is applied to the substrate below the threshold voltage value; and a current carrying formation formed on a first surface of the substrate, the current carrying formation being in electrical communication with the substrate when a voltage is applied to the substrate above threshold voltage value (see figure 2, column 2, line 10 to column line 10; except,

the substrate includes one or more vias extending from the first surface of the substrate through the substrate to a second, opposing side of the substrate, a surface of the substrate defining the vias comprising current carrying material in electrical communication with the current carrying formation on the first surface of the substrate such that the current carrying formation on the first surface is electrically contactable via the current carrying material within the vias from the second opposing surface of the substrate. However via structure is known in the art for electrical connection of the conductive traces / layers in double sided circuit board or in multilayer circuit board, see section 3.6.2 and 3.6.3 of "Printed Circuit Handbook" by Clyde F. Coombs, Jr.,

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fourth edition. Further '517 discloses the use of voltage switchable material in the manufacture of any type of printed circuit board (see '517, column 3, line 34-48).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the device of Shrier with via structure as disclosed in the handbook and as taught by '517 in order to have a device having via structure in order to get the electrical connection between the two sides as needed for the specific requirement.

Regarding claim 10, the modified assembly of Shrier discloses all the features of the claimed invention including the current carrying formation on the both the surfaces and the via connecting both the surfaces as applied to claim 1 above.

Regarding claim 5,11 the modified device of Shrier does not explicitly disclose the current carrying formation electrochemically bonded to the surface of the substrate, there is no specific structural difference in the product claimed and the prior art. Various method of forming the current carrying formation, including the electrochemical bonding are known in the art and can be used depending upon the specific requirement. Further, this is the patentability of the product claimed and not the recited process step. If the product in the product by process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior art was made by a different process.

Regarding claims 18 and 31, though the modified assembly of Shrier does not disclose the current carrying formation being formed by a process that includes contacting the substrate with a current carrying formation precursor, as applied to claim 5, if the product in the product by process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior art was made by a different process.

Regarding claims 49-50, 57-59 Shrier discloses all the feature of the substrate including the current carrying formation and the via contacting the current carrying formation as applied to claim 1, 10 and 18 above, except it is used in a semiconductor device. However the use of substrate in the various semiconductor devices is known for the functionality of the system and any known substrate can be used depending upon the system requirement.

Regarding claim 2, 13 Shrier further discloses the voltage switchable material comprises a mixture of a binder material, conductive material and cross-linking agent (column 3, line 30-35).

Regarding claim 3,14 Shrier further discloses the conductive material is dispersed as a powder in the mixture (column 3, line 30-60).

Regarding claim 4, Shrier further discloses the binder material includes a polymer binder, the conductive material includes a metal powder, and the cross-linking agent includes Varox peroxide (column 3, line 30-60).

Regarding claim 12,28, the modified assembly of Shrier discloses all the features of the claimed invention including the current carrying formation on the surface of the substrate and the via connecting the current carrying formation on the substrate.

Regarding claims 23-25, 29-30, the applicant is claiming various steps / processes for the current carrying formation / vias on the substrate. As applied to claim 5, above, If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.

Regarding claims 26-27, 51-56 and 60-61 the applicant is claiming various threshold voltages for the substrate. However the threshold voltage of the substrate will depend upon the spacing between the conductive particles, the particle size and shape and the electrical properties of the insulating binder material and substrate with various threshold voltages can be made depending upon the specific requirement of the system. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the modified device of Shrier with threshold

voltage value as claimed in the claims 26-27, 51-56 and 60-61 in order to have the substrate with desired properties, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art, In re Boesh, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Response to Arguments

4. Applicant's arguments filed on April 4, 2002 have been fully considered but they are not persuasive.

Regarding claims 1,10,58, 59, 28 and 31, the applicant's argument about the difficulty of formation of via is reasonable, however, smaller vias with reliable electrical connections with conductive material in the vias are known in the art made by various processes such as filling the via with conductive precursor under vacuum or pressure etc. Applicant's argument about the conductive material in the via is considered but the conductive material is on the voltage switchable material is not persuasive as the applicant claims a substrate **comprises** the voltage switchable material, substrate is not completely made out of voltage switchable material and the vias can be anywhere in the substrate which comprises the voltage switchable material.

Regarding claims to electrochemically bonding a current carrying formation to a substrate comprising voltage switchable materials, claims 5,18,31,57,29 and 30, it is not correct that " the examiner refuses to give weight to **the process by which the current**

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carrying material is formed on the substrate comprising voltage switchable dielectric material". Due consideration is given to the process limitation, but the claimed structure is same as the prior art. The applicant is alleging the differences of general nature but does not recite any specific difference. The applicant is required to set forth what differences exist between the structure of the claimed invention and the prior art device.

Conclusion

5. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

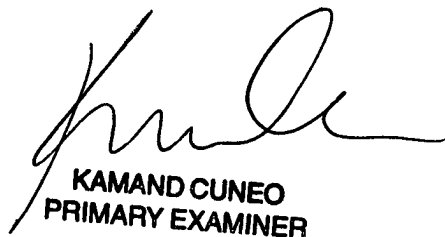
Collins, US Patent No. 5,262,754, discloses a substrate comprising a voltage switchable dielectrical material with conductive formation on both the sides of the substrate.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ishwar (I. B.) Patel whose telephone number is (703) 305 2617. The examiner can normally be reached on M-F (6:30 - 4) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L Talbott can be reached on (703) 305 9883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305 3431 for regular communications and (703) 305 7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0956.

ibp
August 7, 2002



KAMAND CUNEO
PRIMARY EXAMINER